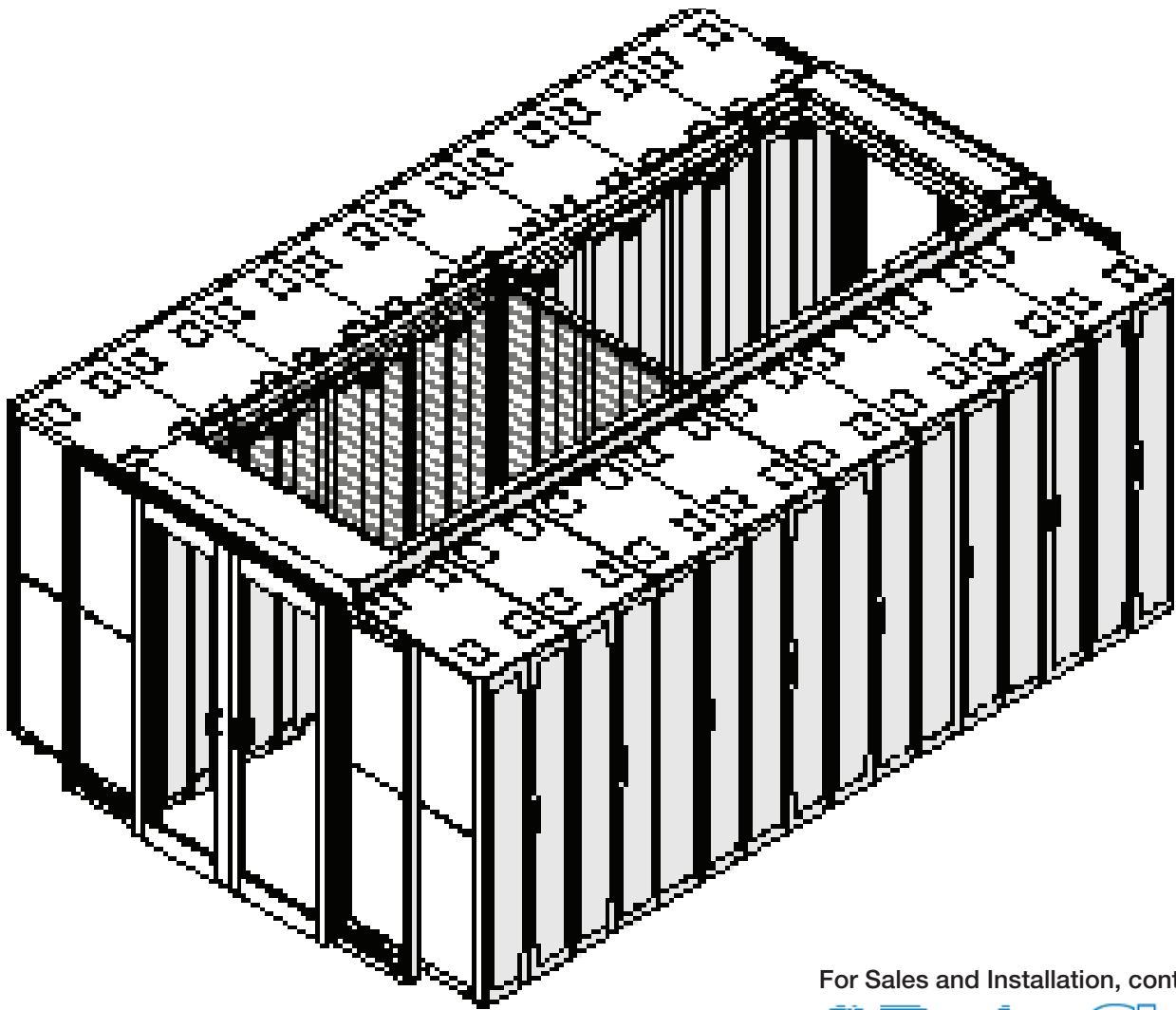




ROOF SYSTEMS  
**Polar Cap 2**

Install/User Guide



For Sales and Installation, contact:

 **Data Clean**<sup>®</sup>

(800) 328-2256 • [www.dataclean.com](http://www.dataclean.com)



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## Safety Information

- While unpacking use caution with sharp objects such as razors to avoid damaging the product.
- A minimum of two people should be available to install this product.
- While drilling or using power tools safety glasses and gloves should be worn to avoid injury.

## 1 Year Limited Warranty

Subzero Engineering warrants to the original purchaser that it will, as its sole option, repair or replace this product or any part of this product, if it confirms that the product is defective in materials or workmanship under normal use and maintenance for one year after the purchase date of the product.

This limited 1 (one) year warranty DOES NOT COVER the following:

1. Defects or damage arising from shipping, installation, alterations, accidents, abuse, misuse, lack of proper maintenance and use of other than genuine Subzero replacement parts, in all cases whether caused by a contractor, service company, the owner or any other person.
2. Deterioration through normal wear and tear.
3. Damages resulting from abuse or misuse from failure to install or maintain this product in accordance with the written instructions furnished by Subzero Engineering.
4. Use of Cleaning Products Containing Calcium Hypo Chlorite (Chlorine), Scouring Powders or pads shall not be covered.
5. Expense of normal maintenance.
6. All costs of removal, transportation, labor, reinstallation or other costs including postage and/or shipping costs to obtain warranty service shall be paid by the customer.
7. Any liability for consequential or incidental damages, all of which are hereby expressly disclaimed, and implied warranties, including those of merchantability or fitness for purpose intended are specifically excluded. (Some jurisdictions do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental or consequential damages, so these limitations and exclusions may not apply to you.)
8. Responsibility for compliance with local code requirements are excluded from this warranty. (Since local code requirements vary greatly, distributors, dealers, installation contractors, and users should determine whether there are any code restrictions on the installation or use of a specific product.)

This limited warranty gives you specific legal rights. You may have other statutory rights that vary from state to state or from province to province, in which case this limited warranty does not affect such statutory rights.

### Limited Warranty Contact Information

For service under these limited warranties, it is suggested that a claim be made through the contractor or dealer from or through whom the product was purchased, or that a service request (including a description of the product model and of the defect) be sent to the following address:

United States:

Subzero Engineering  
228 W 12300 S  
Suite 108  
Draper, UT 84020  
Attention: Director of Consumer Affairs

For residents of the United States, warranty information may also be obtained by calling: (801) 810-3500

## Pre-Assembly

### Planning Assembly

Unpack all items and compare them to the Hardware Included and Package Contents lists. Lay all parts on a flat non-abrasive surface such as cardboard. If any item appears damaged or is missing, do not assemble and contact Subzero Engineering.

### Tools Needed

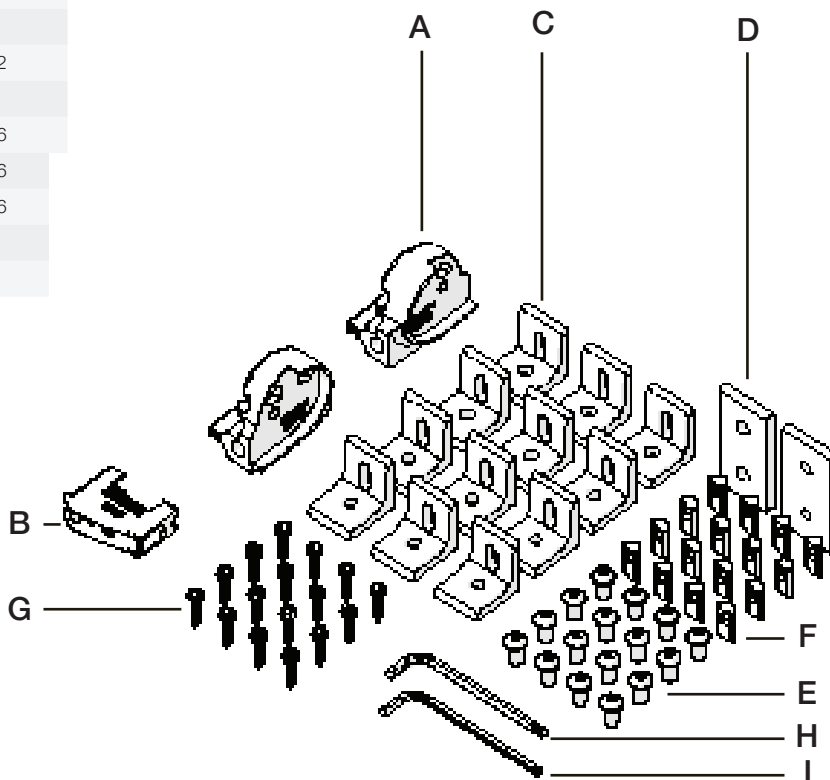
TOOLS PROVIDED	ADDITIONAL TOOLS REQUIRED
4mm Hex Ball Key	Powered Drill
5mm Hex Key	7/16" Deep Socket
	6" Socket Extension
	3/8" Socket
	Socket Wrench
	Tape Measure
	Fish Tape

**NOTE** It is recommended that at least two people assemble this product.

**NOTE** Hardware is not shown to scale. Threads on hardware may be shown as removed.

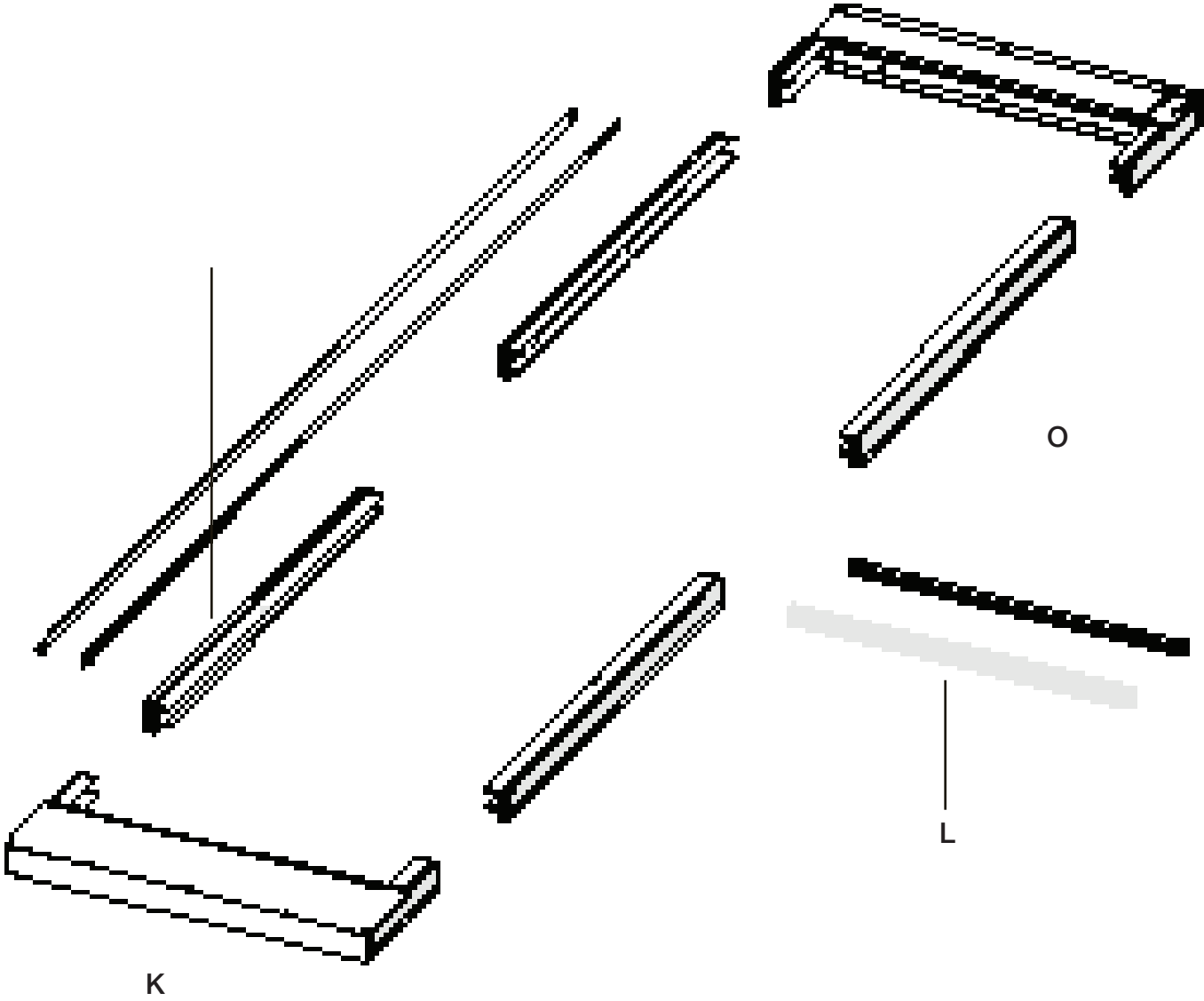
### Hardware Included

ITEM	DESCRIPTION	QTY.
A	Belt Clamps (RH and LH)	1 EA
B	Limit Switch Assembly	1
C	2 Hole Slotted Corner Bracket	12
D	2 Hole Joining Plate	2
E	BHSCS M8 x 16mm	16
F	M8 Drop-In Nut	16
G	3/8" Head x 1" Self Tapping Screw	16
H	5mm Hex Ball Key	1
I	4mm Hex Key	1



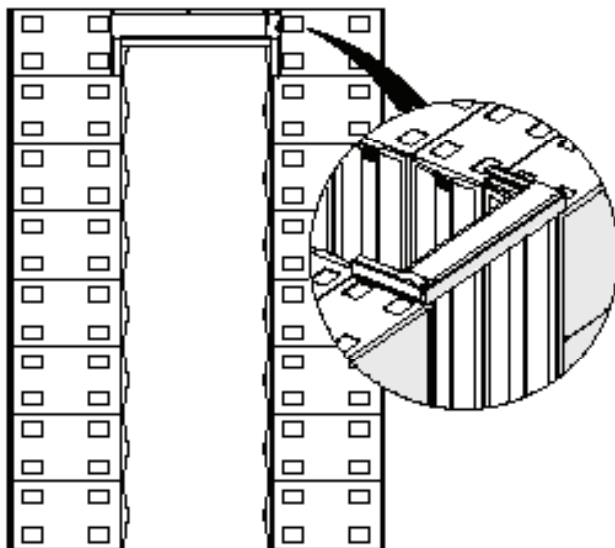
**Package Contents**

ITEM	DESCRIPTION	QTY.
J	Motor-End Assembly	1
K	Tensioner-End Assembly	1
L	Baffle Assembly	1
M	Side Rails* <i>* Polar Cap 2 is a custom built-to-length product. The number of side rails you receive will vary based upon the ordered length of the Polar Cap 2.</i>	—
N	Drive Belt	2
O	Header	1



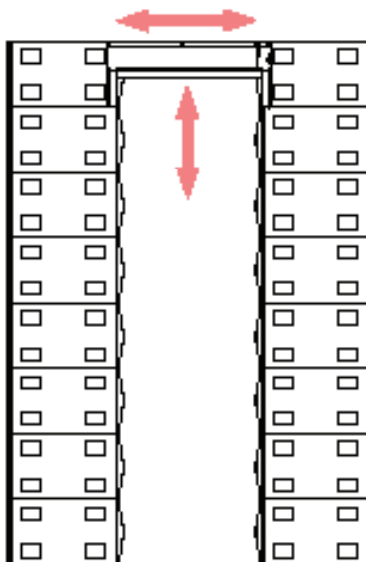
## Assembly

### 1 – Place the Motor-End



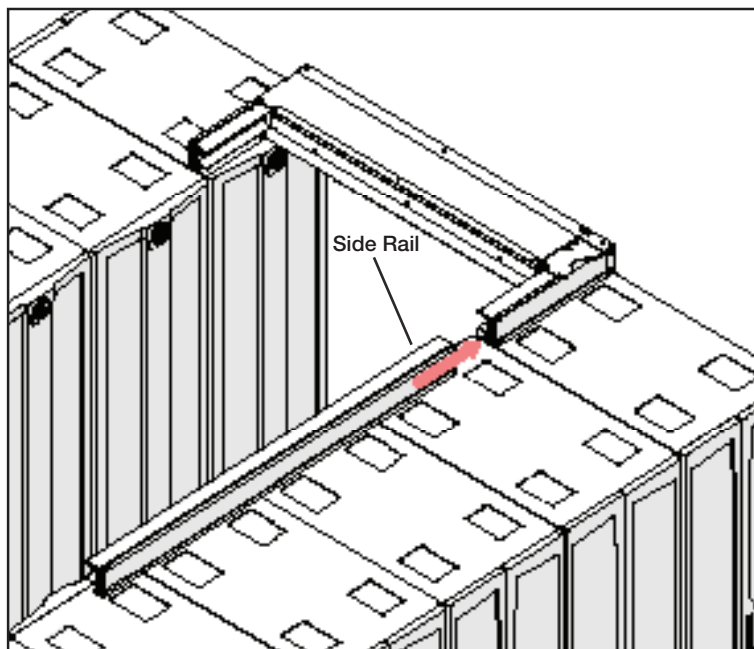
- (1.1) Determine which end of the aisle the motor-end assembly will be on and which indicator lights will be on this end.
  - (1.2) Once the location has been determined, two people should lift the motor-end assembly into place.
2. Note that manual operation

### 2 – Center the Motor-End



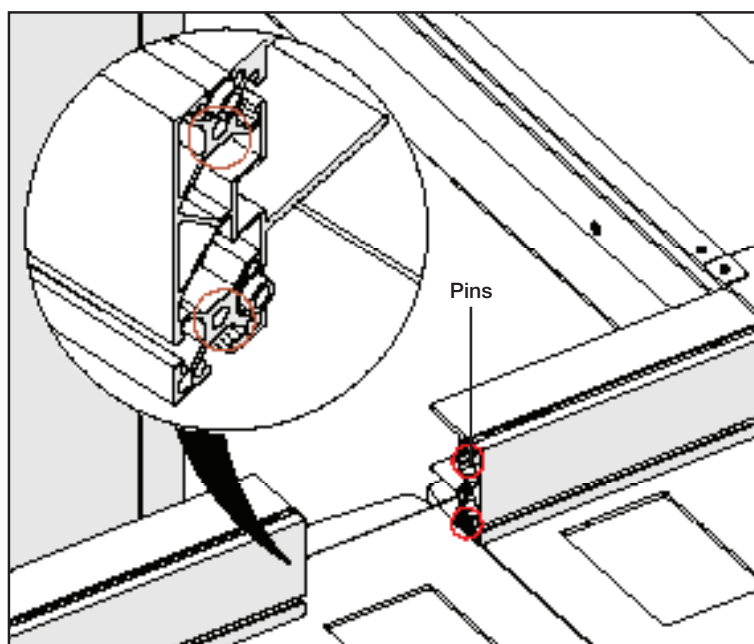
- (2.1) Justify the motor-end assembly width and height.
- (2.2) Using a tape measure, ensure that the motor-end assembly is centered on the aisle width.

### 3 – Place the Side Rails



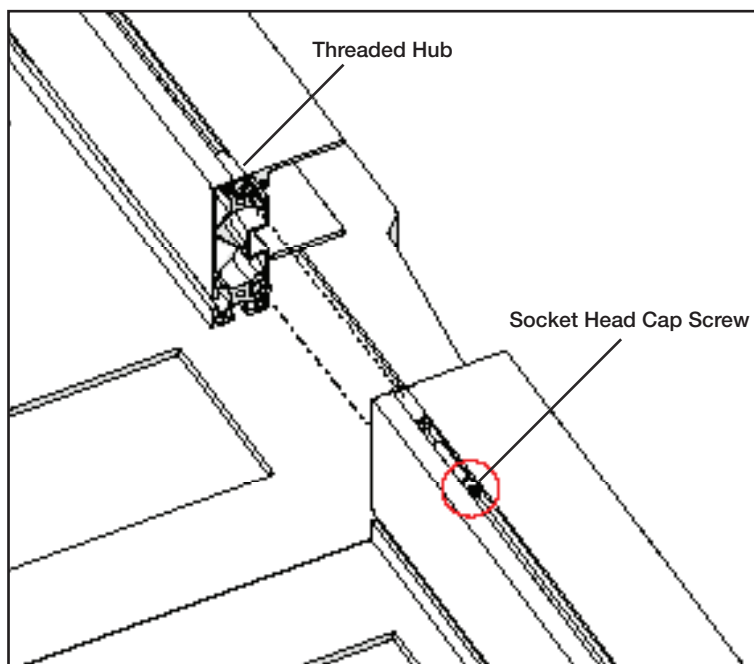
**(3.1)** Slide the side rail on top of the cabinets to line up with the motor-end assembly.

### 4 – Align the Side Rail Pins



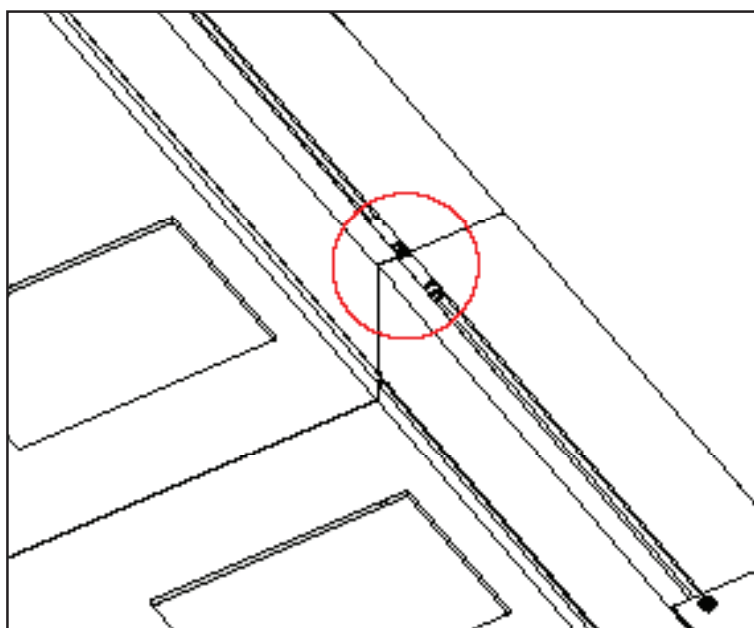
**(4.1)** As you slide the side rail into place, ensure that the alignment pins go into the correct holes.

## 5 – Fasten the Side Rails



- (5.1)** Fasten the top and bottom of the rail together using the installed butt-fastener. Use the 5mm ball head hex key to tighten the socket head cap screw. Note that this needs to be done on the top and bottom of each rail end.

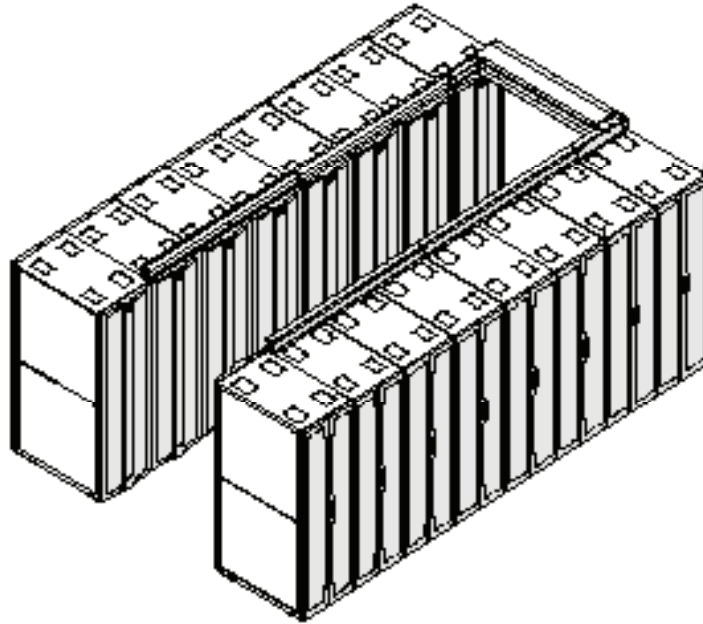
## 6 – Tighten the Connection



- (6.1)** Ensure the butt-fastener connections are tight.

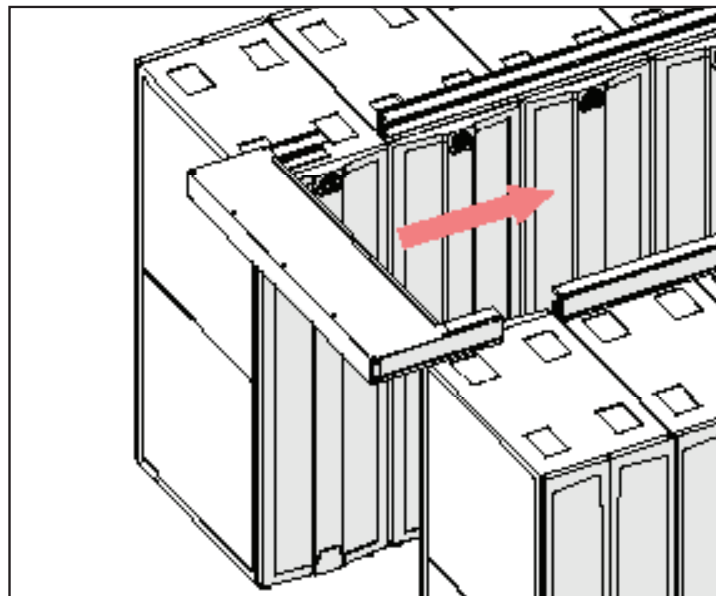


## 7 – Connect All Rails



**(7.1)** Repeat Steps 3 - 6

## 8 – Attach the Tensioner-End



**(7.1)** Using two people, lift the tensioner assembly on top of the server cabinets.

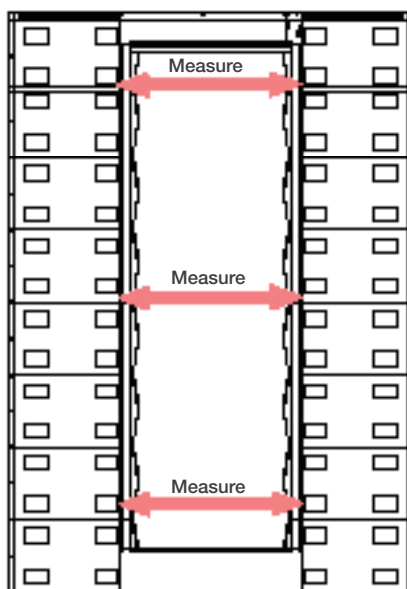
**(7.2)** Line the edges of the assembly up with the side rails.

**(7.3)** Attach the tensioner assembly to the side rails using the methods described in Steps 3 - 6.

## 9 – Position and Square the Frame

NOTE

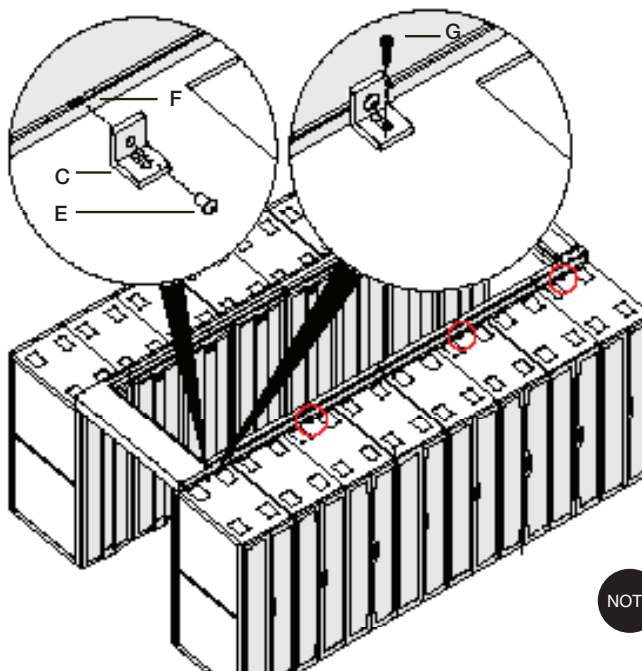
The Polar Cap 2 should be square to within 1/16" to function properly.



- (9.1) Using a tape measure, measure the width of the Polar Cap 2 to determine the squareness.

Measure down the length of

## 10 – Fasten the Frame Down



NOTE

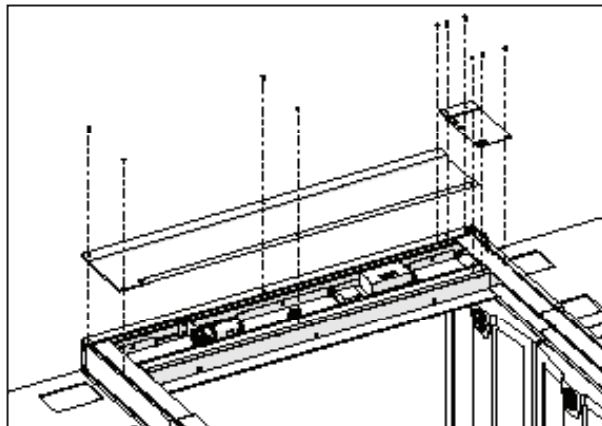
Use a vacuum while using self tapping screws to ensure that particulates do not enter server equipment.

NOTE

There are many ways to secure the frame to the server cabinet. Make sure you select a method appropriate for your environment.

- (10.1) Use Items C, E, F, and G to fasten the frame down to the cabinets.  
 (10.2) Space Item C down the length every 6' or as needed to keep the frame square.

## 11 – Remove the Motor Cover

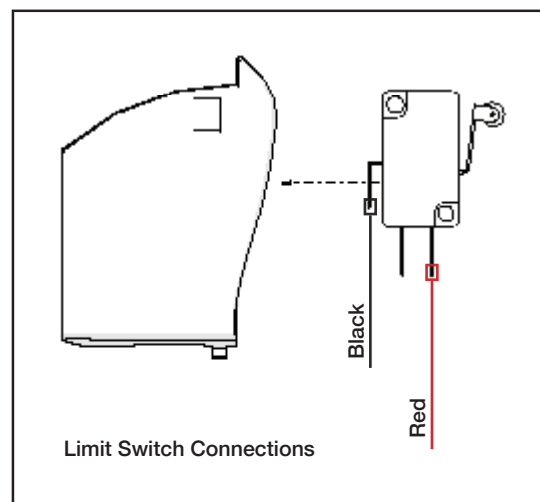
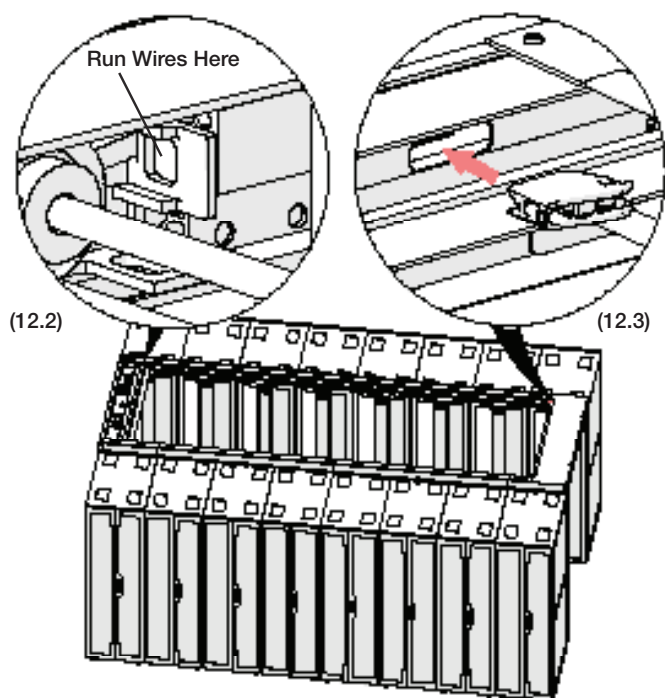


**(11.1)** Using the 4mm hex key, remove the screws holding the two-piece motor cover in place.

**NOTE**

Save these screws for later. The covers will be screwed back into place.

## 12 – Connect the Limit Switch

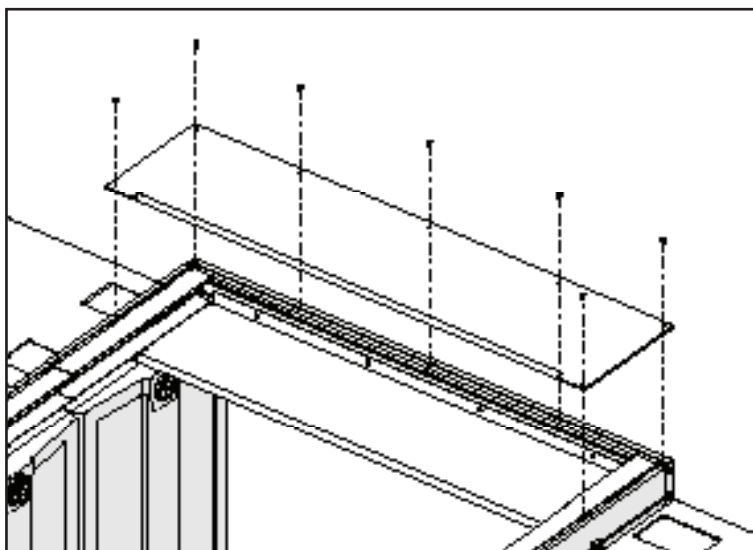


**(12.1)** Find the limit switch wire bundle in the motor end box.

**(12.2)** Use a fish tape to run the limit switch wires down the hollow of the side rails.

**(12.3)** Plug the wires into the limit switch assembly (Item B) and push the assembly into the slot. Ensure that the limit switch is sloping up towards the tensioner end box.

### 13 – Remove the Tensioner Cover

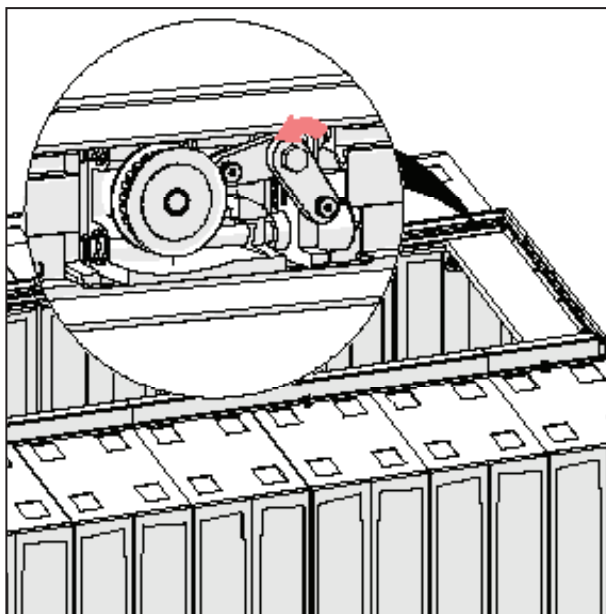


**(13.1)** Using the 4mm hex key, remove the screws holding the tensioner cover in place.

**NOTE**

Save these screws for later. The cover will be screwed back into place.

### 14 – Cam Over the Belt Tensioner

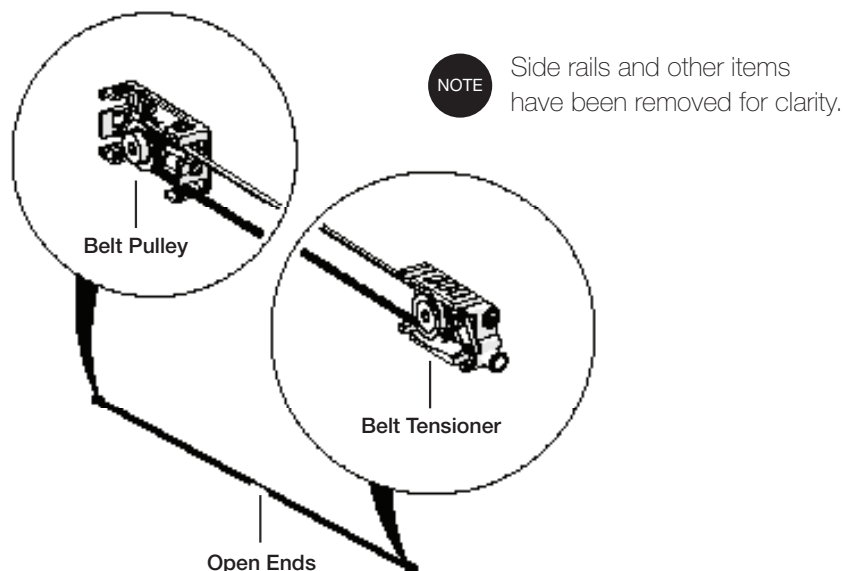


**(14.1)** Use a socket wrench, extension, and 7/16" socket to cam the belt tensioner over.

**NOTE**

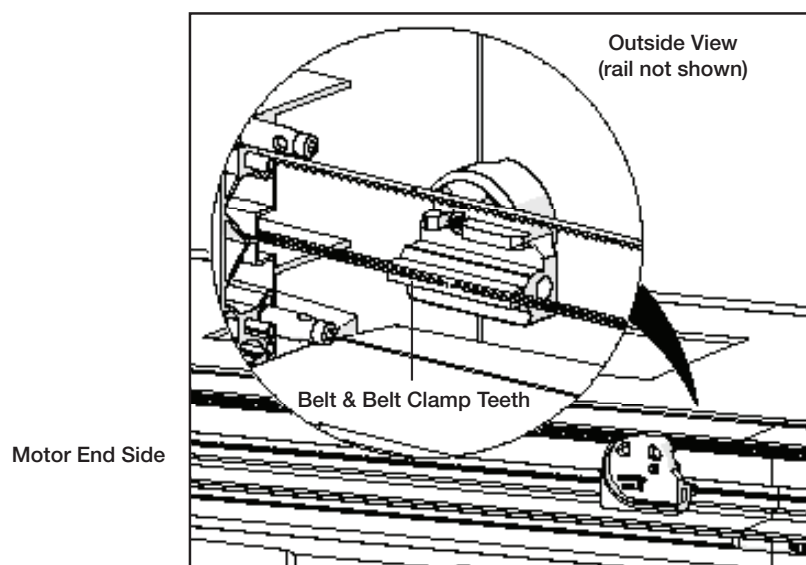
The belt tensioner is crucial to installing the belts into the system.

## 15 – Run the Belts



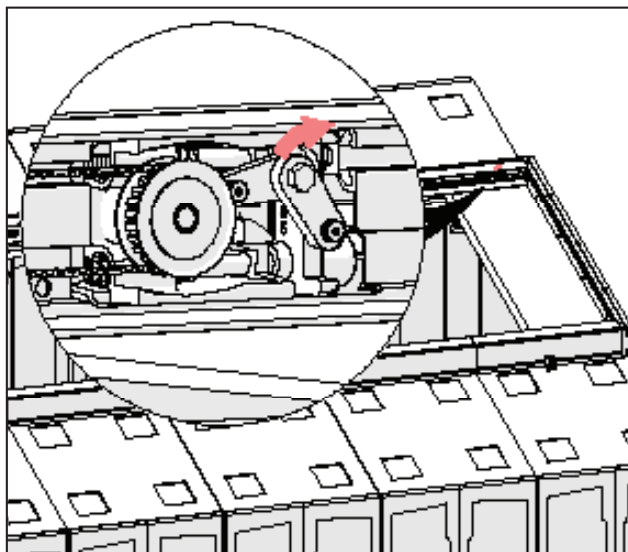
- (15.1) With the tensioner car (tensioner car) (motor-end) and belt tensioner (tensioner car).
- (15.2) The belt ends should meet in the bottom slot of the rail near the middle of the Polar Cap 2.
- (15.3) Ensure that the open ends of the belt are in the bottom slot of the rail with the teeth facing up. The belt should also be free of twists.

## 16 – Attach the Belt Clamps



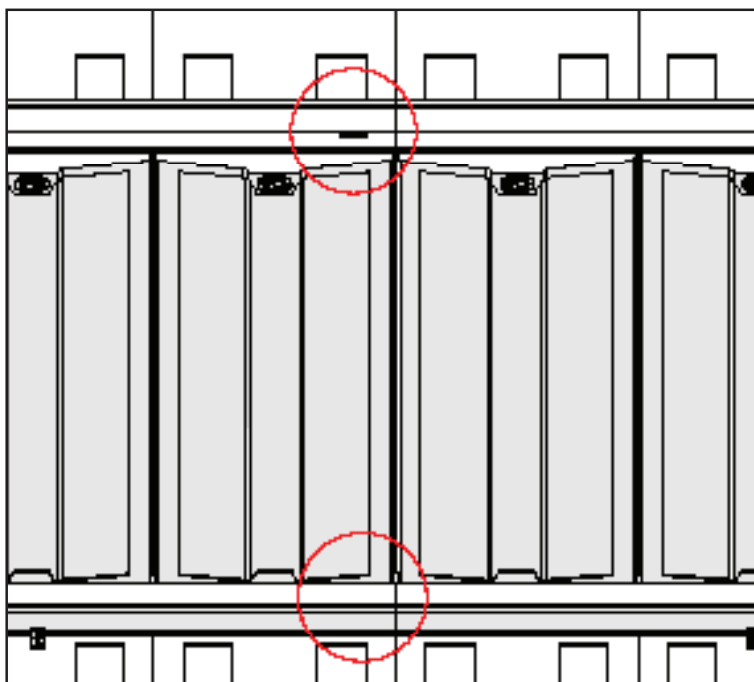
- (16.1) Take the belt clamp (Item A) and line it up correctly. The belt clamps are left and right hand specific. The curved slope of the belt clamp should be on the motor end side.
- (16.2) Take the two belt ends and pull them tight. Once tight, insert the two belt ends into the belt clamp teeth. The belt will stay in the clamp with friction.

## 17 – Cam Back Over the Belt Tensioner



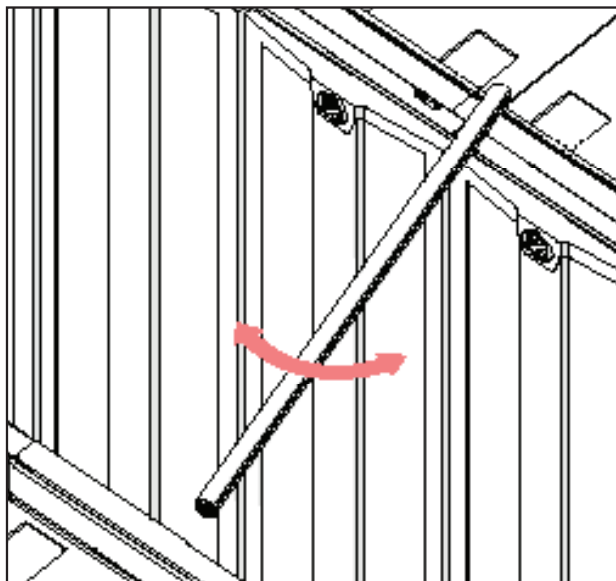
- (17.1) Use a socket wrench, extension, and 7/16" socket to cam the belt tensioner back over.
- (17.2) Do not tighten. The spring tensioner will automatically adjust for the correct belt tension.

## 18 – Repeat on Other Side of Polar Cap 2



- (18.1) Repeat Steps 14 - 17 on the other side of the Polar Cap 2.
- (18.2) When running the belts, try to line up the belt clamps so that they are across from one another.

## 19 – Insert the Header



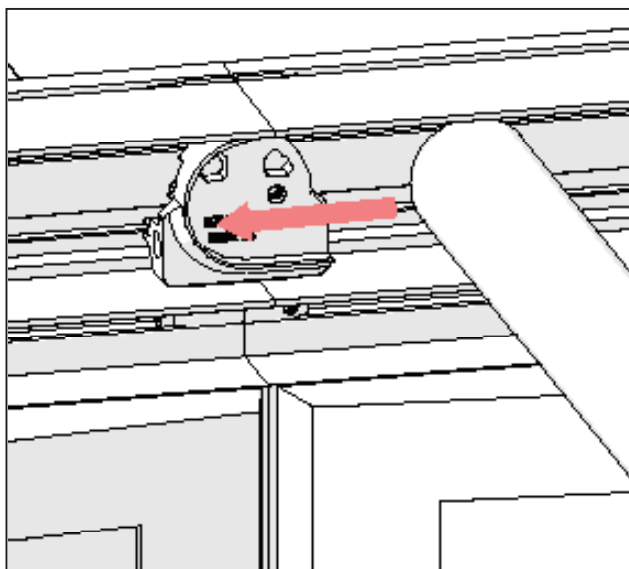
**(19.1)** Take the header (Item O) and insert it into the rail/baffle slot.

**NOTE**

The header will need to be twisted to fit into the rail/baffle slot.

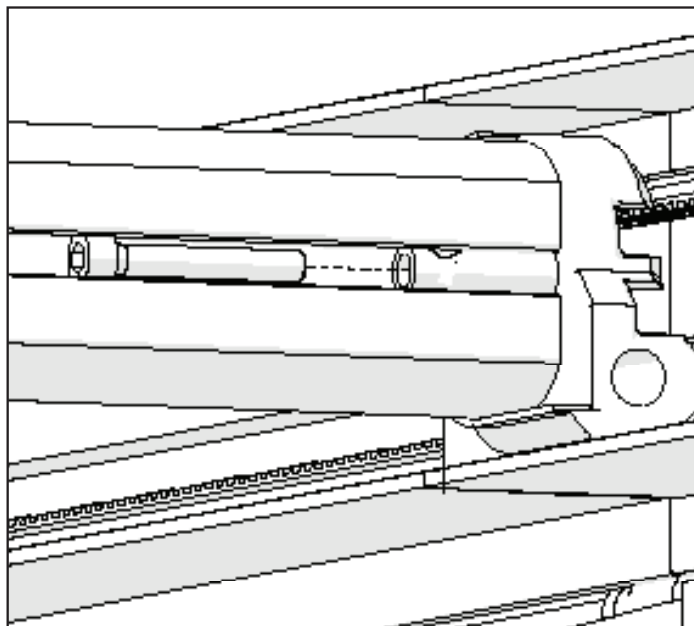
**(19.2)** Ensure that the rounded side of the extrusion is facing the motor-end.

## 20 – Position the Header



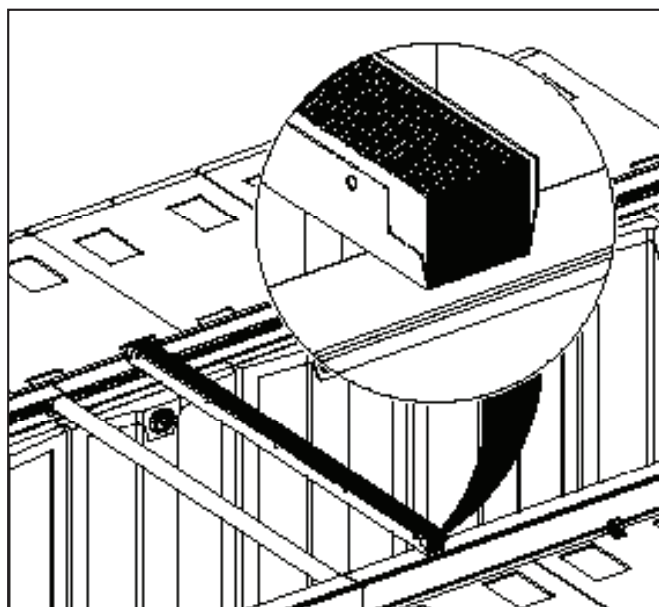
**(20.1)** Push the header into the belt clamps on both sides of the Polar Cap 2.

## 21 – Fasten the Header



**(21.1)** Using a 5mm hex ball key and screw provided in the slot, fasten the rail to the belt clamps on both sides.

## 22 – Position the Baffle

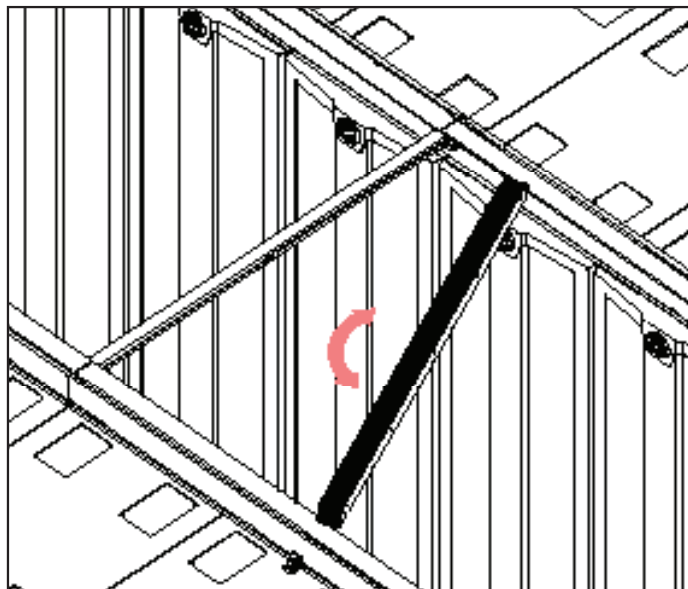


**(22.1)** Take the baffle (Item L) and position it as shown in figure.

**(22.2)** The notched side of the baffle should be facing the motor-end.



## 23 – Insert the Baffle

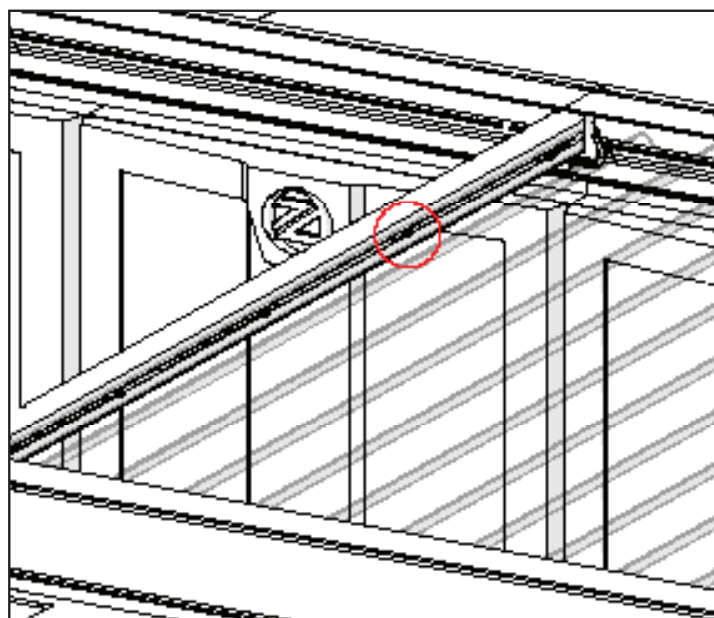


**(23.1)** Take the baffle (Item L) and insert it into the rail/baffle slot.

**NOTE**

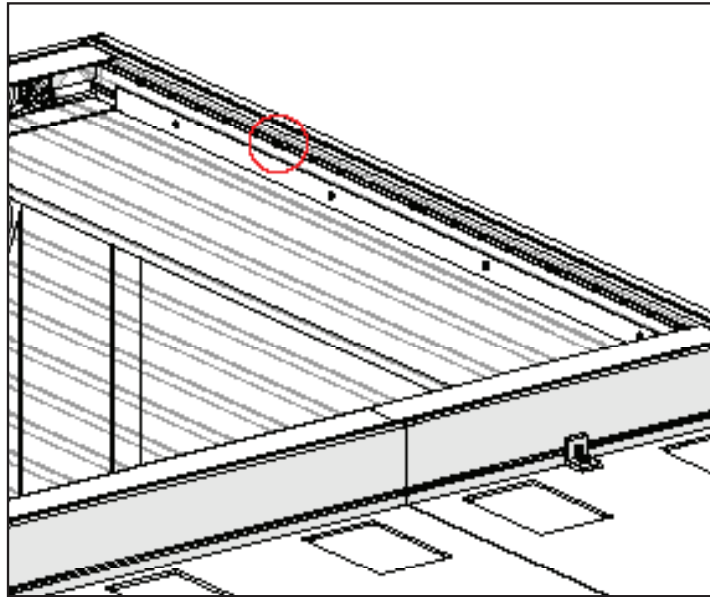
The baffle will need to be twisted to fit into the rail/baffle slot.

## 24 – Attach the Baffle to the Header



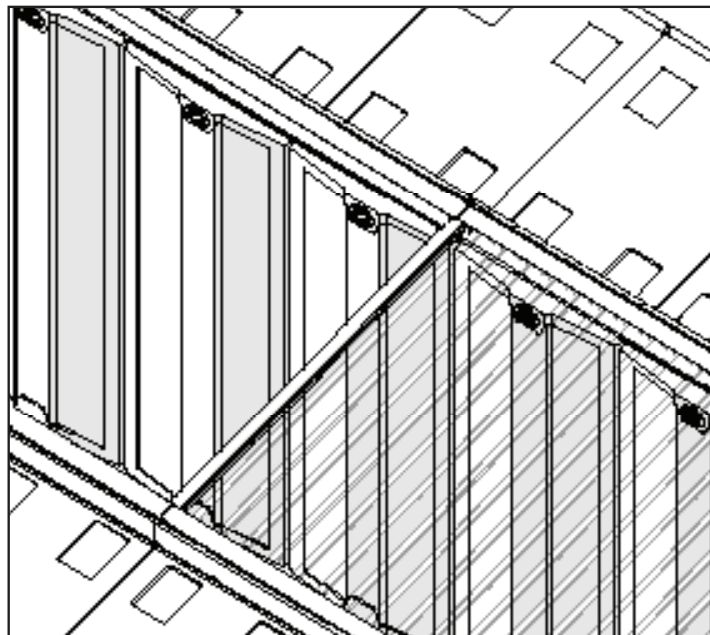
**(24.1)** Using a 4mm hex key and the hardware in the header, fasten the baffle to the header.

## 25 – Attach the Baffle to the Tensioner-End



**(25.1)** Using a 4mm hex key and the hardware in the tensioner end, fasten the baffle to the extrusion rail.

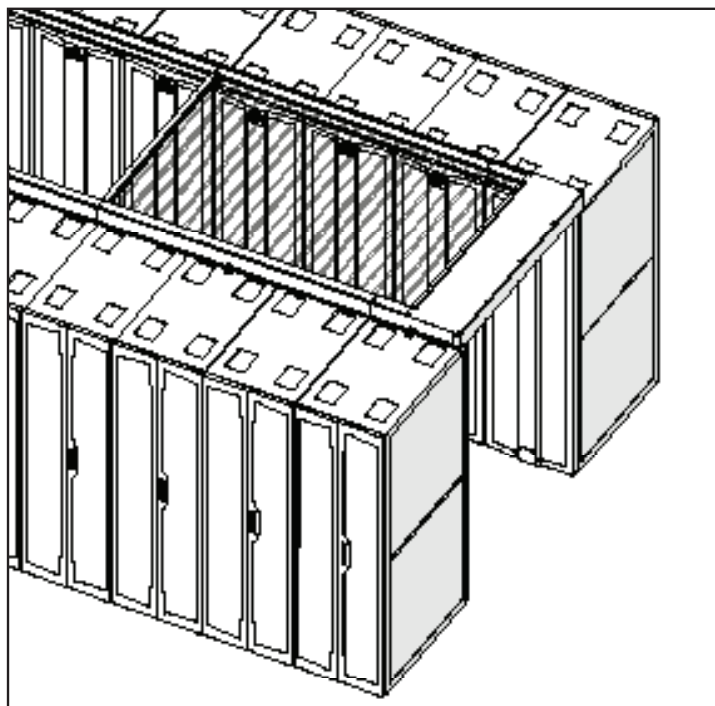
## 26 – Square the Header



**(26.1)** Ensure that the header is perpendicular to the side rails.

**(26.2)** Pull each end backward or forward as necessary. It is normal for the belt to jump teeth to accomplish this.

## 27 – Replace the Tensioner-End Cover



**(27.1)** Using a 4mm hex key, reinstall the tensioner-end cover that was removed in Step 13.

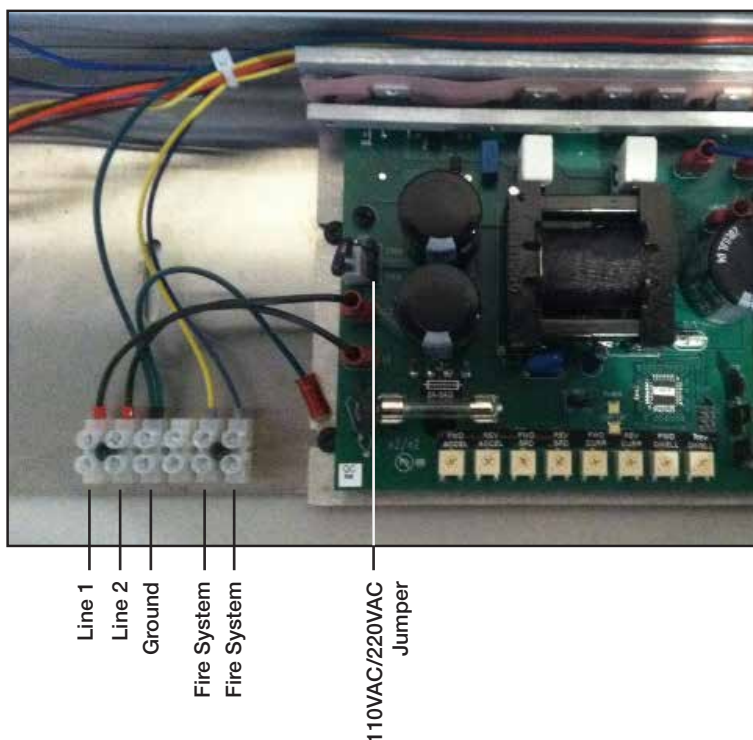
## 28 – Apply Power and Put on the Motor End Cover

**(28.1)** Using a 4mm hex key, reinstall the motor-end cover that was removed in Step 11.

**(28.2)** Apply power and the fire interlock connections. See Steps 29 - 30.

## Electrical Connections

### 29 – Power Supply



#### Power Supply Connection

(The electrical line, power supply, and fire panel connections are not provided by Subzero.)

110/220VAC, 5A/2.5A, 50/60Hz Single Phase Supply\*

\* Subzero recommends connecting to a dedicated branch emergency backed up power supply circuit to insure that the Polar Cap 2 will operate during a facility power outage.

The product ships ready for connection to 110VAC single phase.

#### IMPORTANT!

To convert for connection to 220VAC single phase, a jumper must be moved inside the electrical compartment – **this must be done BEFORE applying power at 220VAC to the Polar Cap 2 to prevent damage.** (See image above)

Conductor size should be based on the National Electrical Code NFPA 70 for the type of conductor/cable selected, the rating of the branch circuit overcurrent device, and the conductor length.

There are two wiring connection openings on the Polar Cap 2. One is provided for use as the Power Supply Connection and the other for the Fire System Interlock Connection. The customer is responsible for providing all wiring connections between these facility systems and the Polar Cap 2. (See image above)

## Fire System Interlock Connection

**(Subzero recommends the fire protection contractor makes this connection.)**

Polar Cap 2 provides a two-wire 24VDC (verify) signal that should be wired to customer fire alarm control panel (FACP) normally open (N.O.) contact. (See image on previous page)

Upon closure of the FACP N.O. contact, the Polar Cap 2 will automatically open to expose the server aisle to the fire extinguishing agent. Connection to a FACP “pre-act” contact will insure that the roof is fully open prior to extinguishing agent discharge.

Determine conductor size based on the National Electrical Code NFPA 70 for the type of conductor/cable selected and the conductor length

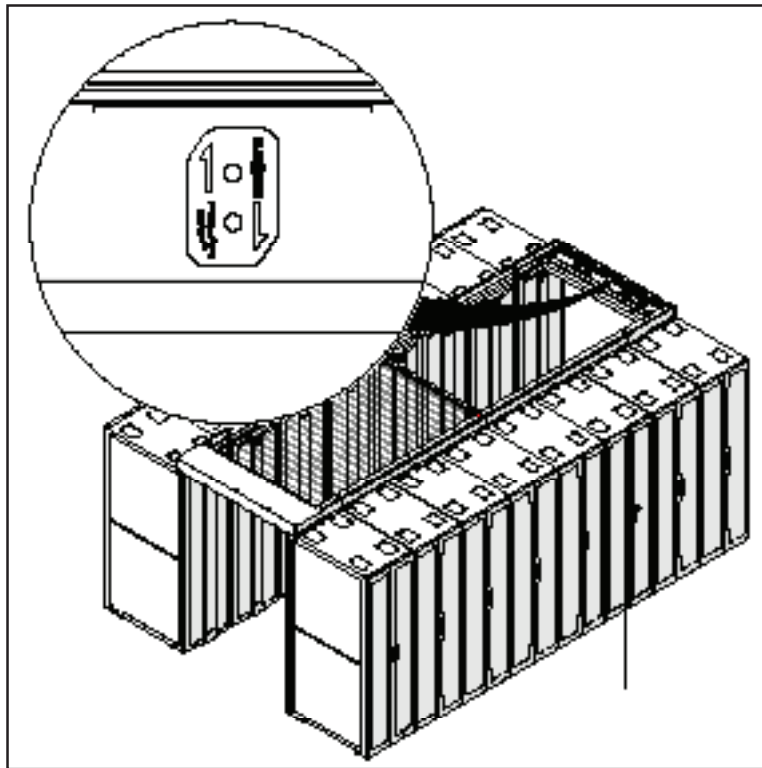
The Polar Cap 2 is designed to fully open in (60) seconds or less.\*

*\* Dependent on cap length – time given is based on maximum cap length of 30 feet.*

The Polar Cap 2 fire system interlock connection overrides the normal operation Open and Close push-buttons. For example, if the Close push-button was being operated, and the fire system interlock occurred, the Polar Cap 2 would open even if the Close push-button continued to be pressed.



## Operation



- The Polar Cap 2 can be operated for maintenance using the interface on the bottom of the motor-end.
- When operating:
  - Ensure that all obstructions are clear from the baffle and headers pathway.
  - Do not place any objects into the path of the header and baffle.

## Cleaning

- Use a soft cloth, mild detergent, and water.
- Do not use any abrasive pads or materials.
- Do not use harsh solvents or thinners.

Design and specifications are subject to change without notice.

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